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Family: Branchiobdellidae

by

Krzysztof Kasprzak

Family: BRANCHIOBDELLIDAE 213/

Species small or medium size. Body colour yellowish, sometimes with a brownish tinge. Body segmentation weakly delimited. Eye spots absent. Setae absent. The body is short and consists of three distinct sections: an externally unsegmented head, a trunk consisting of ten segments, and a caudal sucker. The head is made up of four segments. A prostomium is absent. The trunk (segments V-XIV) has secondary segmentation--the anterior eight segments are distinctly larger than the rest. The caudal sucker consists of a transformed and very muscular terminal trunk segment (XV). The body cavity is well developed only in the trunk; in the head and caudal sucker it is reduced. The septa are well

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*The figures in the right hand margin indicate page numbers in the original (Tr.).

developed. The mouth is surrounded by a small muscular fold bearing tiny papillae. In the buccal cavity are a dorsal jaw and a ventral jaw that differ in size and structure. The pharynx is very muscular and leads to a short oesophagus which gradually broadens into a middle intestine. The anus is on the ventral side of the body near the base of the caudal sucker. The circulatory system consists of a dorsal vessel, which emerges from the intestinal plexus in segment VII, a ventral vessel and four pairs of circulatory vessels. The nephridia (two pair) are usually arranged asymmetrically. One pair of male gonads in segment XI or two pair in segments IX and X. The vasa deferentia link together into a single duct which discharges into the distal or proximal part of the cylindrical atrium. Where the vas deferens enters the atrium there are often gland cells. The well developed penes are housed in sacs and eversible. A single male ventral genital pore in the middle of segment X. Paired female gonads in segment XI on septum 10/11. Ventral female genital pores in posterior ventral section of segment XII. Single spermatheca in segment IX. Shape of the ampulla varies. ls ~ 12, s 15.

This family, which is divided into two subfamilies, includes nine genera and around 35 species that occur in North America, Europe and Asia.

Subfamily: Branchiobdellinae

Paired male gonads and sperm funnels in segment X.

This subfamily has only one genus.

Genus: *Branchiobdella* Odier

Body cylindrical, flattened dorso-ventrally. External appendages absent. Mouth surrounded by lip. Male gonads paired. Atrium cylindrical. Penes sometimes with small cuticular denticles.

This genus includes seven species occurring chiefly in central and southern Europe. Two species are known in North America.

Key to species 214/

1. Jaws triangular with large central denticle and between two and four symmetrically arranged lateral denticles. Lateral denticles often severely reduced or absent. Ectal duct of spermatheca short ..... 2.

-. Jaws rectangular with denticles of varying length arranged symmetrically or asymmetrically. Ectal duct of spermatheca of medium length or long ..... 3.

2. Dorsal jaw and ventral jaw more or less of equal size. Lateral denticles on jaws developed.

Body white or yellow with red tinge. Head the same width as first trunk segments. Trunk segments biannulate. Anterior annulus distinctly wider than posterior. Sucker

distinctly separate, but slightly wider than adjacent trunk segments. Jaws triangular, similar in size, with large central denticle and between two and four small lateral denticles arranged symmetrically. Lateral denticles on ventral jaw often reduced. Jaw formula: (2)3(4)'(2)3(4). Vas deferens long, discharges into central section of atrium. Atrium elongated, broader in distal section. Penis covered with numerous cuticular denticles with edges directed posteriorly. Spermatheca flask-shaped or oval. Ectal duct very short. ls 6-12 (Fig. 850-859). Widely distributed in Europe. In Poland it occurs in the Wielkopolska-Kujawy lowlands, Mazury lake district, Malopolska highlands and Pieniny mountains. Occurs on *Astacus astacus* (L.), *A. leptodactylus* Esch. and *Austropotamobius torrentium* (Schr.), chiefly on the surface of the carapace and in the vicinity of the eyes and mouth organs. 215/

.....*B. parasita* Henle.

-. Dorsal jaw distinctly larger than ventral jaw. Lateral denticles on jaws reduced or absent.

Body colour red. Head indistinctly separated from trunk. Mouth surrounded by dorsal and ventral lip. Sucker weakly developed. Dorsal jaw larger than ventral jaw. Both jaws triangular with large central denticle. Lateral denticles usually absent, less often reduced. Jaw formula: 0'0. Vas deferens discharges into crest of atrium. Cuticular denticles on penis absent. Spermatheca small,

flask-shaped. ls ~ 12, lbj dor 190-250, lbj ven 60-100. (Fig. 860-864). Common in Europe. In Poland it occurs in the Wielkopolska-Kujawy lowlands and the Malopolska highlands. Lives almost exclusively on the gills of *Astacus astacus* (L.) and *A. leptodactylus* Esch. Very rarely found on surface of carapace.

.....*B. astaci* Odier.

3. Jaws with central denticle distinctly longer than lateral denticles ..... 4.

-. Jaws with outermost denticles distinctly longer than the rest.

Body transparent, colourless or whitish. Head the same width as trunk segments. Jaws rectangular, more or less the same size. Dorsal jaw sometimes slightly larger than ventral jaw, with six denticles: two large outermost denticles and four central denticles of equal size. Ventral jaw has four or five denticles: two large outermost denticles and two or three central denticles of equal length. Jaw formula: $^{1}4^{1}/^{1}3(2)^{1}$. The vas deferens discharges into the crest of the atrium. Cuticular denticles on penis poorly developed. Spermathecal ampulla long, cylindrical. Ectal duct very long, almost twice as long as ampulla. ls 6. (Fig. 865-871). Common in Europe. In Poland it occurs in the Malopolska highlands. Occurs chiefly on the gills of *Astacus astacus* (L.), *A. leptodactylus* Esch. and

216/

Austropotamobius torrentium (Schr.). It is also occasionally found on the surface of the carapace.

.....*B. hexadonta* Gruber.

4. Dorsal jaw with lateral denticles arranged asymmetrically. Spermatheca with ectal duct between 1.5 and 2 times longer than the diameter of the ampulla.

Jaws rectangular, of fairly variable shape. Dorsal jaw with large central denticle and five lateral denticles arranged asymmetrically. Ventral jaw with central denticle and four lateral denticles arranged symmetrically. Jaw formula: 2'3/2'2. The vas deferens discharges into the atrium at a distance from the peak one third its length. Spermathecal ampulla oval. Ectal duct between around 1.5 and 2 times longer than the diameter of the ampulla. ls ~ 6. (Fig. 872-879). The genus is rare in Europe. It has occurred at a few stations in northern Italy, Yugoslavia and the USSR. In Poland it has been reported in the Malopolska highlands and the Sandomierz lowlands. It occurs on the cephalothorax of *Astacus astacus* (L.) in the joint region of the limbs and tentacles. Some authors regard this as a the subspecies *B. pentadonta* Whit.

.....*B. italica* Canegallo. 217/

-. Dorsal jaw with lateral denticles arranged symmetrically. Spermatheca with ectal duct distinctly shorter than the diameter of the ampulla.

Body transparent, colourless or whitish. Mouth surrounded by ring of papillae. Dorsal and ventral lip absent. Head distinctly narrower than trunk segments. Sucker small but distinctly separate from rest of body. Jaws rectangular; the number and shape of the denticles are quite variable. Jaws typical, with large central denticle and two small lateral denticles arranged symmetrically. The ventral jaw has the same number of denticles as the dorsal jaw, but is more poorly developed. Often both jaws are asymmetrical or have six denticles. Jaw formula: (1)2'2(1,3)/(1)2'2. The vas deferens discharges into the atrium at a distance one third its length from the peak. Spermathecal ampulla oval. Ectal duct shorter than the diameter of the ampulla.
ls 4,5-6. (Fig. 880-900). Common in Europe. In Poland it occurs in the Malopolska highlands and in the Pieniny mountains. Occurs on the cephalothorax of *Astacus astacus* (L.), especially on the eye stalks and in the region of the joints of limbs and tentacles.

.....*B. pentadonta* Whit.

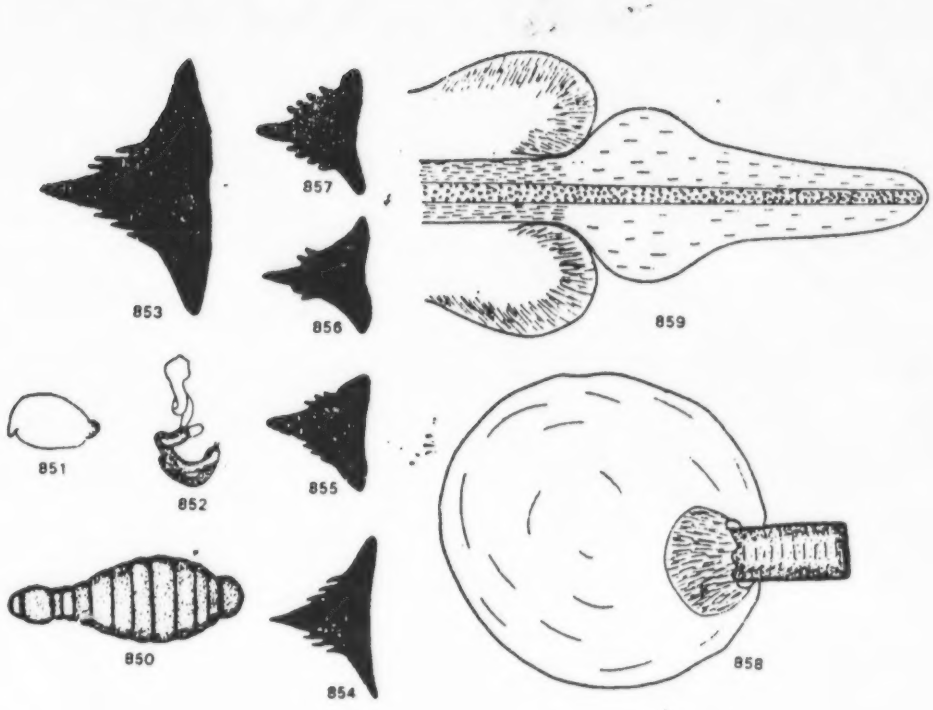

Fig. 850-859. *Branchiobdella parasita* Henle: 850 - dorsal view; 851 - spermatheca; 852 - male gonoduct; 853-857 - dorsal jaws; 858 - spermathecal ampulla; 859 - penis; (850, 854-857 from Wojtas, 851-852 from Karaman, 853, 858-859 from Kasprzak).

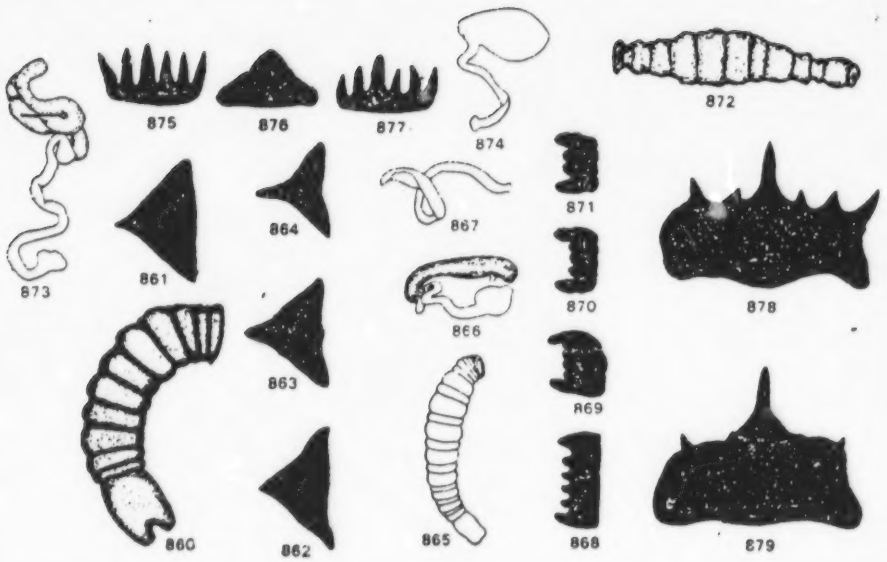

Fig. 860-879. Oligochaeta from the genus *Branchiobdella* Odier: 860-864 - *B. astaci* Odier; 865-871 - *B. hexadonta* Gruber; 872-879 - *B. italica* Canegallo; 860 - dorsal view; 861-864, 868-871, 875, 877-878 - dorsal jaws; 865 - lateral view; 866, 873 - male gonoduct; 867, 874 - spermatheca; 872 - ventral view; 876, 879 - ventral jaws. (860-861, 868 from Wojtas, 862-864, 869-871, 875-877 from Kahl and Wojtas, 865 from Pop, 866-867, 872-874 from Karaman, 878-879 from Kasprzak).

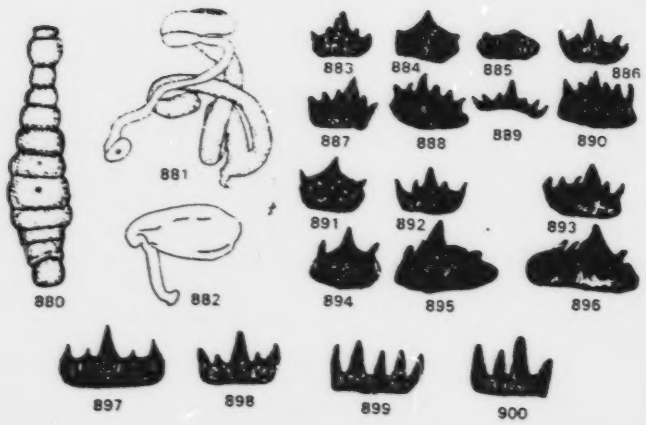

Fig. 880-900. *Branchiobdella pentadonta* Whit.: 880 - ventral view; 881 - male gonoduct; 882 - spermatheca; 883-886, 891-893, 897-900 - dorsal jaws; 887-890, 894-896 - ventral jaws. (880-882 from Karaman, 883-896 from Halgos, 897 from Wojtas, 898-900 from Kahl and Wojtas).